STATE OF UTAH - DEPARTMENT OF ADMINISTRATIVE SERVICES

Division of Facilities Construction and Management

DFCM

STANDARD LOW BID PROJECT

August 15, 2005

MAIN PARKING PAVING IMPROVEMENTS

SNOW COLLEGE SOUTH
RICHFIELD, UTAH

DFCM Project No. 00016710

Jones & DeMille Engineering
1535 South 100 West
Richfield, Utah 84701
Phone: (435) 896-8266
Fax: (435) 896-8268

TABLE OF CONTENTS

Current copies of the following documents are hereby made part of these contract documents by reference. These documents are available on the DFCM web site at http://dfcm.utah.gov or are available upon request from DFCM.

DFCM General Conditions dated May 25, 2005.
DFCM Application and Certification for Payment dated May 25, 2005.

Technical Specifications :
Drawings:

The Agreement and General Conditions dated May 25, 2005 have been updated from versions that were formally adopted and in use prior to this date. The changes made to the General Conditions are identified in a document entitled Revisions to General Conditions that is available on DFCM's web site at http://dfcm.utah.gov

NOTICE TO CONTRACTORS

Sealed bids will be received by the Division of Facilities Construction and Management (DFCM) for:

MAIN PARKING PAVING IMPROVEMENTS
SNOW COLLEGE SOUTH – RICHFIELD, UTAH
DFCM PROJECT NO: 00016710

Bids will be in accordance with the Contract Documents that will be available on Monday August 15, 2005 at 10:00 AM and distributed in electronic format only on CDs from DFCM, 4110 State Office Building, SLC, Utah and on the DFCM web page at http://dfcm.utah.gov. Approved plan repositories may obtain a hard copy set from Jones & DeMille Engineering of Richfield, Utah (435) 896-8266 upon paying a deposit of $50.00. For questions regarding this project, please contact Dan Clark, DFCM, at (801) 538-3725. No others are to be contacted regarding this bidding process. The construction budget for this project is $70,000.00.

A **MANDATORY** pre-bid meeting will be held at 10:00 AM on Thursday August 25, 2005 at the Snow College South Campus in Richfield, Utah. Please meet in the parking lot located at the Southeast corner of 200 South and Technology Drive Richfield, Utah. All bidders wishing to bid on this project are required to attend this meeting.

Bids will be received until the hour of 3:00 PM on Thursday, September 1, 2005 at DFCM, 4ll0 State Office Building, Salt Lake City, Utah 84114. Bids will be opened and read aloud in the DFCM Conference Room, 4110 State Office Building, Salt Lake City, Utah. NOTE: Bids must be received at 4110 State Office Building by the specified time.

Bid security, in the amount of five percent (5%) of the bid, must be submitted as stated in the Instruction to Bidders.

The Division of Facilities Construction and Management reserves the right to reject any or all bids or to waive any formality or technicality in any bid in the interest of DFCM.

DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT
Marla Workman, Contract Coordinator
4110 State Office Building, Salt Lake City, Utah 84114
Telephone: (801)538-3260

PROJECT SCHEDULE

PROJECT NAME:	**MAIN PARKING PAVING IMPROVEMENTS SNOW COLLEGE SOUTH, RICHFIELD, UTAH**
DFCM PROJECT NO.	**00016710**

Event	Day	Date	Time	Place
Advertisement Placed	Sunday	August 14, 2005		Multi-Media
Bidding Documents Available	Monday	August 15, 2005	10:00 AM	DFCM, 4110 State Office Bldg, SLC, UT or DFCM web site *
Mandatory Pre-bid Site Meeting	Thursday	August 25, 2005	10:00 AM	On Site Snow College South Richfield, Utah
Last Day to Submit Questions	Tuesday	August 30, 2005	4:00 PM	Dan Clark DFCM
Final Addendum Issued	Wednesday	August 31, 2005	4:00 PM	DFCM, 4110 State Office Bldg, SLC, UT or DFCM web site *
Prime Contractors Turn In Bid and Bid Bond / Bid Opening in DFCM Conference Room	Thursday	September 1, 2005	3:00 PM	DFCM, 4110 State Office Bldg, SLC, UT
Sub-contractor List Due	Friday	September 2, 2005	3:00 PM	DFCM, 4110 State Office Bldg, SLC, UT

*** DFCM's web site address is http://dfcm.utah.gov**

BID FORM

NAME OF BIDDER _____ DATE _____

To the Division of Facilities Construction and Management
4110 State Office Building
Salt Lake City, Utah 84114

The undersigned, responsive to the "Notice to Contractors" and in accordance with the "Instructions to Bidders", in compliance with your invitation for bids for the **SNOW COLLEGE SOUTH MAIN PARKING PAVING IMPROVEMENTS RICHFIELD, UTAH DFCM PROJECT NO. 00016710** and having examined the Contract Documents and the site of the proposed Work and being familiar with all of the conditions surrounding the construction of the proposed Project, including the availability of labor, hereby proposes to furnish all labor, materials and supplies as required for the Work in accordance with the Contract Documents as specified and within the time set forth and at the price stated below. This price is to cover all expenses incurred in performing the Work required under the Contract Documents of which this bid is a part:

I/We acknowledge receipt of the following Addenda: _____

Item	Description	Unit	Quanitity	Unit Price	Total Price
1.	Mobilization	L.S.	1	$_____	$_____
2.	Asphalt Saw Cut	L.F.	430	$_____	$_____
3.	Excavation	C.Y.	960	$_____	$_____
4.	Reconstruct Manhole	L.S.	1	$_____	$_____
5.	Reconstruct Valve Box	L.S.	2	$_____	$_____
6.	Granular Borrow	Ton	1,720	$_____	$_____
7.	Untreated Base Course	Ton	960	$_____	$_____
8.	Asphalt Concrete Pavement	Ton	470	$_____	$_____
9.	Concrete Curb and Gutter	L.F.	200	$_____	$_____
10.	Trenching, Conduit and Condustors	L.F.	300	$_____	$_____
11.	Lighting	L.S.	3	$_____	$_____
12.	Striping	L.S.	1	$_____	$_____

For all work shown on the Drawings and described in the Specifications and Contract Documents, I/we agree to perform for the sum of:

_____ DOLLARS ($_____)
(In case of discrepancy, written amount shall govern)

I/We guarantee that the Work will be Substantially Complete by **October 31, 2005** after receipt of the Notice to Proceed, should I/we be the successful bidder, and agree to pay liquidated damages in the amount of **$500.00** per day for each day after expiration of the Contract Time as stated in Article 3 of the Contractor's Agreement.

This bid shall be good for 45 days after bid opening.

Enclosed is a 5% bid bond, as required, in the sum of _____

The undersigned Contractor's License Number for Utah is _____.

Upon receipt of notice of award of this bid, the undersigned agrees to execute the contract within ten (10) days, unless a shorter time is specified in the Contract Documents, and deliver acceptable Performance and Payment bonds in the prescribed form in the amount of 100% of the Contract Sum for faithful performance of the contract.

The Bid Bond attached, in the amount not less than five percent (5%) of the above bid sum, shall become the property of the Division of Facilities Construction and Management as liquidated damages for delay and additional expense caused thereby in the event that the contract is not executed and/or acceptable l00% Performance and Payment bonds are not delivered within the time set forth.

Type of Organization:

_____
(Corporation, Partnership, Individual, etc.)

Any request and information related to Utah Preference Laws:

_____

Respectfully submitted,

_____
Name of Bidder

ADDRESS:

_____

_____

_____
Authorized Signature

INSTRUCTIONS TO BIDDERS

1. Drawings and Specifications, Other Contract Documents

Drawings and Specifications, as well as other available Contract Documents, may be obtained as stated in the Notice to Contractors.

Any person or firm that fails to return the complete set of Drawings and Specifications, or other contract documents, in good condition within ten (10) days after the time set for receiving bids, will forfeit the deposit. Notwithstanding this, if the Contract Documents are provided on a compact disc, the compact disc does not need to be returned.

2. Bids

Before submitting a bid, each contractor shall carefully examine the Contract Documents, shall visit the site of the Work; shall fully inform themselves as to all existing conditions and limitations; and shall include in the bid the cost of all items required by the Contract Documents. If the bidder observes that portions of the Contract Documents are at variance with applicable laws, building codes, rules, regulations or contain obvious erroneous or uncoordinated information, the bidder shall promptly notify the DFCM Representative and the necessary changes shall be accomplished by Addendum.

The bid, bearing original signatures, must be typed or handwritten in ink on the Bid Form provided in the procurement documents and submitted in a sealed envelope at the location specified by the Notice to Contractor's prior to the deadline for submission of bids. It is your responsibility to allow for the time needed to park in Capitol Hill as recent construction activity has made the parking more difficult. Identification is required to enter the building.

Bid bond security, in the amount of five percent (5%) of the bid, made payable to the Division of Facilities Construction and Management, shall accompany bid. THE BID BOND MUST BE ON THE BID BOND FORM PROVIDED IN THE PROCUREMENT DOCUMENTS IN ORDER TO BE CONSIDERED AN ACCEPTABLE BID.

If the bid bond security is submitted on a bid bond form other than DFCM's required bid bond form, and the bid security meets all other legal requirements, the bidder will be allowed to provide an acceptable bid bond by the close of business on the next business day following notification by DFCM of submission of a defective bid bond security. NOTE: A cashier's check cannot be used as a substitute for a bid bond.

3. Contract and Bond

The Contractor's Agreement will be in the form bound in the specifications. The Contract Time will be as indicated in the bid. The successful bidder, simultaneously with the execution of the Contract Agreement, will be required to furnish a performance bond and a payment bond, both bearing original

signatures, upon the forms provided in the procurement documents. The performance and payment bonds shall be for an amount equal to one hundred percent (100%) of the contract sum and secured from a company that meets the requirements specified in the requisite forms. Any bonding requirements for subcontractors will be specified in the Supplementary General Conditions.

4. Listing of Subcontractors

Listing of Subcontractors shall be as summarized in the "Instructions and Subcontractor's List Form", which are included as part of these Contract Documents. The Subcontractors List shall be delivered to DFCM or faxed to DFCM at (801)538-3677 within 24 hours of the bid opening. Requirements for listing additional subcontractors will be listed in the Contract Documents.

DFCM retains the right to audit or take other steps necessary to confirm compliance with requirements for the listing and changing of subcontractors. Any contractor who is found to not be in compliance with these requirements is subject to a debarment hearing and may be debarred from consideration for award of contracts for a period of up to three years.

5. Interpretation of Drawings and Specifications

If any person or entity contemplating submitting a bid is in doubt as to the meaning of any part of the drawings, specifications or other Contract Documents, such person shall submit to the DFCM Project Manager a request for an interpretation thereof. The person or entity submitting the request will be responsible for its prompt delivery. Any interpretation of the proposed documents will be made only by addenda duly issued and a copy of such addenda will be mailed or delivered to each person or entity receiving a set of documents. Neither the DFCM nor A/E will be responsible for any other explanations or interpretations of the proposed documents. A/E shall be deemed to refer to the architect or engineer hired by DFCM as the A/E or Consultant for the Project.

6. Addenda

Any Addenda issued during the time of bidding shall become part of the contract Documents made available to the bidders for the preparation of the bid, shall be covered in the bid, and shall be made a part of the Contract.

7. Award of Contract

The Contract will be awarded as soon as possible to the lowest, responsive and responsible bidder, based on the lowest combination of base bid and acceptable prioritized alternates, provided the bid is

reasonable, is in the interests of the State of Utah to accept and after applying the Utah Preference Laws in U.C.A. Title 63, Chapter 56. DFCM reserves the right to waive any technicalities or formalities in any bid or in the bidding. Alternates will be accepted on a prioritized basis with Alternate 1 being highest priority, Alternate 2 having second priority, etc.

8. DFCM Contractor Performance Rating

As a contractor completes each DFCM project, DFCM, the architect/engineer and the using agency will evaluate project performance based on the enclosed "DFCM Contractor Performance Rating" form. The ratings issued on this project will not affect this project but may affect the award on future projects.

9. Licensure

The Contractor shall comply with and require all of its subcontractors to comply with the license laws as required by the State of Utah.

10. Right to Reject Bids

DFCM reserves the right to reject any or all Bids.

11. Time is of the Essence

Time is of the essence in regard to all the requirements of the Contract Documents.

12. Withdrawal of Bids

Bids may be withdrawn on written request received from bidder prior to the time fixed for opening. Negligence on the part of the bidder in preparing the bid confers no right for the withdrawal of the bid after it has been opened.

13. Product Approvals

Where reference is made to one or more proprietary products in the Contract Documents, but restrictive descriptive materials of one or more manufacturer(s) is referred to in the Contract Documents, the products of other manufacturers will be accepted, provided they equal or exceed the standards set forth in the drawings and specifications and are compatible with the intent and purpose of the design, subject to the written approval of the A/E. Such written approval must occur prior to the deadline established for the last scheduled addenda to be issued. The A/E's written approval will be in an issued addendum. If the descriptive material is not restrictive, the products of other manufacturers specified will be accepted without prior approval provided they are compatible with the intent and purpose of the design as determined by the A/E.

14. Financial Responsibility of Contractors, Subcontractors and Sub-subcontractors

Contractors shall respond promptly to any inquiry in writing by DFCM to any concern of financial responsibility of the contractor, subcontractor or sub-subcontractor.

15. Debarment

By submitting a bid, the Contractor certifies that neither it nor its principals, including project and site managers, have been, or are under consideration for, debarment or suspension, or any action that would exclude such from participation in a construction contract by any governmental department or agency. If the Contractor cannot certify this statement, attach to the bid a detailed written explanation which must be reviewed and approved by DFCM as part of the requirements for award of the Project.

BID BOND

(Title 63, Chapter 56, U. C. A. l953, as Amended)

KNOW ALL PERSONS BY THESE PRESENTS:

That _____ hereinafter referred to as the "Principal," and _____, a corporation organized and existing under the laws of the State of _____, with its principal office in the City of _____ and authorized to transact business in this State and U. S. Department of the Treasury Listed, (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); hereinafter referred to as the "Surety," are held and firmly bound unto the STATE OF UTAH, hereinafter referred to as the "Obligee," in the amount of $_____ (5% of the accompanying bid), being the sum of this Bond to which payment the Principal and Surety bind themselves, their heirs, executors, administrators, successors and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH that whereas the Principal has submitted to Obligee the accompanying bid incorporated by reference herein, dated as shown, to enter into a contract in writing for the _____ _____ Project.

NOW, THEREFORE, THE CONDITION OF THE ABOVE OBLIGATION IS SUCH, that if the said principal does not execute a contract and give bond to be approved by the Obligee for the faithful performance thereof within ten (10) days after being notified in writing of such contract to the principal, then the sum of the amount stated above will be forfeited to the State of Utah as liquidated damages and not as a penalty; if the said principal shall execute a contract and give bond to be approved by the Obligee for the faithful performance thereof within ten (10) days after being notified in writing of such contract to the Principal, then this obligation shall be null and void. It is expressly understood and agreed that the liability of the Surety for any and all defaults of the Principal hereunder shall be the full penal sum of this Bond. The Surety, for value received, hereby stipulates and agrees that obligations of the Surety under this Bond shall be for a term of sixty (60) days from actual date of the bid opening.

PROVIDED, HOWEVER, that this Bond is executed pursuant to provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to same extent as if it were copied at length herein.

IN WITNESS WHEREOF, the above bounden parties have executed this instrument under their several seals on the date indicated below, the name and corporate seal of each corporate party being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

DATED this _____ day of _____, 20_____ .

Principal's name and address (if other than a corporation):

_____

_____

By: _____

Title: _____

Principal's name and address (if a corporation):

_____

_____

By: _____

Title: _____

(Affix Corporate Seal)

Surety's name and address:

_____

_____

STATE OF _____)
) ss.
COUNTY OF _____)

By: _____
Attorney-in-Fact (Affix Corporate Seal)

On this ____ day of _____, 20____, personally appeared before me _____, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney-in-fact of the above-named Surety Company, and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this _____ day of _____, 20_____.
My Commission Expires: _____
Resides at: _____

_____
NOTARY PUBLIC

Agency: _____
Agent: _____
Address: _____
Phone:

Approved As To Form: May 25, 2005
By Alan S. Bachman, Asst Attorney General

INSTRUCTIONS AND SUBCONTRACTORS LIST FORM

The three low bidders, as well as all other bidders that desire to be considered, are required by law to submit to DFCM within 24 hours of bid opening a list of **ALL** first-tier subcontractors, including the subcontractor's name, bid amount and other information required by Building Board Rule and as stated in these Contract Documents, on the following basis:

PROJECTS UNDER $500,000 - ALL SUBS $20,000 OR OVER MUST BE LISTED
PROJECTS $500,000 OR MORE - ALL SUBS $35,000 OR OVER MUST BE LISTED

- Any additional subcontractors identified in the bid documents shall also be listed.
- The DFCM Director may not consider any bid submitted by a bidder if the bidder fails to submit a subcontractor list meeting the requirements of State law.
- List subcontractors for base bid as well as the impact on the list that the selection of any alternate may have.
- Bidder may not list more than one subcontractor to perform the same work.
- Bidder must list "Self" if performing work itself.

LICENSURE:

The subcontractor's name, the type of work, the subcontractor's bid amount, and the subcontractor's license number as issued by DOPL, if such license is required under Utah Law, shall be listed. Bidder shall certify that all subcontractors, required to be licensed, are licensed as required by State law. A subcontractor includes a trade contractor or specialty contractor and does not include suppliers who provide only materials, equipment, or supplies to a contractor or subcontractor.

BIDDER LISTING 'SELF' AS PERFORMING THE WORK:

Any bidder that is properly licensed for the particular work and intends to perform that work itself in lieu of a subcontractor that would otherwise be required to be on the subcontractor list, must insert the term 'Self' for that category on the subcontractor list form. Any listing of 'Self' on the sublist form shall also include the amount allocated for that work.

'SPECIAL EXCEPTION':

A bidder may list 'Special Exception' in place of a subcontractor when the bidder intends to obtain a subcontractor to perform the work at a later date because the bidder was unable to obtain a qualified or reasonable bid under the provisions of U.C.A.Section 63A-5-208(4). The bidder shall insert the term 'Special Exception' for that category of work, and shall provide documentation with the subcontractor list describing the bidder's efforts to obtain a bid of a qualified subcontractor at a reasonable cost and why the bidder was unable to obtain a qualified subcontractor bid. The Director must find that the bidder complied in good faith with State law requirements for any 'Special Exception' designation, in order for the bid to be considered. If awarded the contract, the Director shall supervise the bidder's efforts to obtain a qualified subcontractor bid. The amount of the awarded contract may not be adjusted to reflect the actual amount of the subcontractor's bid. Any listing of 'Special Exception' on the sublist form shall also include amount allocated for that work.

GROUNDS FOR DISQUALIFICATION:

The Director may not consider any bid submitted by a bidder if the bidder fails to submit a subcontractor list meeting the requirements of State law. Director may withhold awarding the contract to a particular bidder if one or more of the proposed subcontractors are considered by the Director to be unqualified to do the Work or for such other reason in the best interest of the State of Utah. Notwithstanding any other provision in these instructions, if there is a good faith error on the sublist form, at the sole discretion of the Director, the Director may provide notice to the contractor and the contractor shall have 24 hours to submit the correction to the Director. If such correction is submitted timely, then the sublist requirements shall be considered met.

CHANGES OF SUBCONTRACTORS SPECIFICALLY IDENTIFIED ON SUBLIST FORM:

Subsequent to twenty-four hours after the bid opening, the contractor may change its listed subcontractors only after receiving written permission from the Director based on complying with all of the following criteria.

(1) The contractor has established in writing that the change is in the best interest of the State and that the contractor establishes an appropriate reason for the change, which may include, but not is not limited to, the following reasons: the original subcontractor has failed to perform, or is not qualified or capable of performing, and/or the subcontractor has requested in writing to be released.
(2) The circumstances related to the request for the change do not indicate any bad faith in the original listing of the subcontractors.
(3) Any requirement set forth by the Director to ensure that the process used to select a new subcontractor does not give rise to bid shopping.
(4) Any increase in the cost of the subject subcontractor work is borne by the contractor.
(5) Any decrease in the cost of the subject subcontractor work shall result in a deductive change order being issued for the contract for such decreased amount.
(6) The Director will give substantial weight to whether the subcontractor has consented in writing to being removed unless the Contractor establishes that the subcontractor is not qualified for the work.

EXAMPLE:

Example of a list where there are only four subcontractors:

TYPE OF WORK	SUBCONTRACTOR, "SELF" OR "SPECIAL EXCEPTION"	SUBCONTRACTOR BID AMOUNT	CONT. LICENSE #
ELECTRICAL	ABCD Electric Inc.	$350,000.00	123456789000
LANDSCAPING	"Self"	300,000.00	123456789000
CONCRETE (ALTERNATE #1)	XYZ Concrete Inc	298,000.00	987654321000
MECHANICAL	"Special Exception" (attach documentation)	Fixed at: 350,000.00	(TO BE PROVIDED AFTER OBTAINING SUBCONTRACTOR)

PURSUANT TO STATE LAW - SUBCONTRACTOR BID AMOUNTS CONTAINED IN THIS SUBCONTRACTOR LIST SHALL NOT BE DISCLOSED UNTIL THE CONTRACT HAS BEEN AWARDED.

SUBCONTRACTORS LIST

PROJECT TITLE: _____

Caution: You must read and comply fully with instructions.

TYPE OF WORK	SUBCONTRACTOR, "SELF" OR "SPECIAL EXCEPTION"	SUBCONTRACTOR BID AMOUNT	CONT. LICENSE #

We certify that:

1. This list includes all subcontractors as required by the instructions, including those related to the base bid as well as any alternates.
2. We have listed "Self" or "Special Exception" in accordance with the instructions.
3. All subcontractors are appropriately licensed as required by State law.

FIRM: _____

DATE: _____ SIGNED BY: _____

NOTICE: FAILURE TO SUBMIT THIS FORM, PROPERLY COMPLETED AND SIGNED, AS REQUIRED IN THESE CONTRACT DOCUMENTS, SHALL BE GROUNDS FOR DFCMS REFUSAL TO ENTER INTO A WRITTEN CONTRACT WITH BIDDER. ACTION MAY BE TAKEN AGAINST BIDDERS BID BOND AS DEEMED APPROPRIATE BY DFCM. ATTACH A SECOND PAGE IF NECESSARY.

FUGITIVE DUST PLAN

The Contractor will fill out the form and file the original with the Division of Air Quality and a copy of the form with the Division of Facilities Construction & Management, prior to the issuance of any notice to proceed.

The Contractor will be fully responsible for compliance with the Fugitive Dust Control Plan, including the adequacy of the plan, any damages, fines, liability, and penalty or other action that results from noncompliance.

Utah Division of Air Quality
April 20, 1999

GUIDANCE THAT MUST BE CONSIDERED IN DEVELOPING AND SUBMITTING A DUST CONTROL PLAN FOR COMPLIANCE WITH R307-309-3, 4, 5, 6, 7

Source Information:

1. Name of your operation (source): provide a name if the source is a construction site.

2. Address or location of your operation or construction site.

3. UTM coordinates or Longitude/Latitude of stationary emission points at your operation.

4. Lengths of the project, if temporary (time period).

5. Description of process (include all sources of dust and fugitive dust). Please, if necessary, use additional sheets of paper for this description. Be sure to mark it as an attachment.

6. Type of material processed or disturbed.

7. Amount of material processed (tons per year, tons per month, lbs./hr., and applicable units).

8. Destination of product (where will the material produced be used or transported, be specific, provide address or specific location), information needed for temporary relocation applicants.

9. Identify the individual who is responsible for the implementation and maintenance of fugitive dust control measures. List name(s), position(s) and telephone number(s).

10. List, and attach copies of any contract lease, liability agreement with other companies that may, or will, be responsible for dust control on site or on the project.

Description of Fugitive Dust Emission Activities
(Things to consider in addressing fugitive dust control strategies.)

1. Type of activities (drilling and blasting, road construction, development construction, earth moving and excavation, handling and hauling materials, cleaning and leveling, etc).

2. List type of equipment generating the fugitive dust.

3. Diagram the location of each activity or piece of equipment on site. Please attach the diagram.

4. Provide pictures or drawings of each activity. Include a drawing of the unpaved/paved road network used to move loads "on" and "off" property.

5. Vehicle miles travels on unpaved roads associated with the activity (average speed).

6. Type of dust emitted at each source (coal, cement, sand, soil, clay, dust, etc.)

7. Estimate the size of the release area at which the activity occurs (square miles). For haul or dirt roads include total miles of road in use during the activity.

Description of Fugitive Dust Emission Controls on Site

Control strategies must be designed to meet 20% opacity or less on site (a lesser opacity may be defined by Approval Order conditions or federal requirements such as NSPS), and control strategies must prevent exceeding 10% opacity from fugitive dust at the property boundary (site boundary) for compliance with R307-309-3.

1. Types of ongoing emission controls proposed for each activity, each piece of equipment, and haul roads.

2. Types of additional dust controls proposed for bare, exposed surfaces (chemical stabilization, synthetic cover, wind breaks, vegetative cover, etc).

3. Method of application of dust suppressant.

4. Frequency of application of dust suppressant.

5. Explain what triggers the use of a special control measure other than routine measures already in place, such as covered loads or measures covered by a permit condition (increase in opacity, high winds, citizen complaints, dry conditions, etc).

6. Explain in detail what control strategies/measures will be implemented off-hours, i.e., Saturdays/Sundays/Holidays, as well as 6 PM to 6 AM each day.

Description of Fugitive Dust Control Off-site

Prevent, to the maximum extent possible, deposition of materials, which may create fugitive dust on public and private paved roads in compliance with R307-309-5, 6, 7.

1. Types of emission controls initiated by your operation that are in place "off" property (application of water, covered loads, sweeping roads, vehicle cleaning, etc.).

2. Proposed remedial controls that will be initiated promptly if materials, which may create fugitive dust, are deposited on public and private paved roads.

Submit the Dust Control Plan to:

Executive Secretary
Utah Air Quality Board
POB 144820
15 North 1950 West
Salt Lake City, Utah 84114-4820

Phone: (801) 536-4000
FAX: (801) 536-4099

Fugitive Dust Control Plan Violation Report

When a source is found in violation of R307-309-3 or in violation of the Fugitive Dust Control Plan, the course must submit a report to the Executive Secretary within 15 days after receiving a Notice of Violation. The report must include the following information:

1. Name and address of dust source.

2. Time and duration of dust episode.

3. Meteorological conditions during the dust episode.

4. Total number and type of fugitive dust activities and dust producing equipment within each operation boundary. If no change has occurred from the existing dust control plan, the source should state that the activity/equipment is the same.

5. Fugitive dust activities or dust producing equipment that caused a violation of R-307-309-3 or the sources dust control plan.

6. Reasons for failing to control dust from the dust generating activity or equipment.

7. New and/or additional fugitive dust control strategies necessary to achieve compliance with R307-309-3, 4, 5, 6, or 7.

8. If it can not be demonstrated that the current approved Dust Control Plan can result in compliance with R307-309-3 through 7, the Dust Control Plan must be revised so as to demonstrate compliance with 307-309-3 through 7. Within 30 days of receiving a fugitive dust Notice of Violation, the source must submit the revised Plan to the Executive Secretary for review and approval.

Submit the Dust Control Plan to:

Executive Secretary
Utah Air Quality Board
POB 144820
15 North 1950 West
Salt Lake City, Utah 84114-4820

Phone: (801) 536-4000
FAX: (801) 536-4099

Attachments: DFCM Form FDR R-307-309, Rule 307-309

CONTRACTOR'S AGREEMENT

FOR:

_____
_____
_____

THIS CONTRACTOR'S AGREEMENT, made and entered into this ____ day of _____, 20__, by and between the DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT, hereinafter referred to as "DFCM", and _____, incorporated in the State of _____ and authorized to do business in the State of Utah, hereinafter referred to as "Contractor", whose address is _____.

WITNESSETH: WHEREAS, DFCM intends to have Work performed at _____ _____.

WHEREAS, Contractor agrees to perform the Work for the sum stated herein.

NOW, THEREFORE, DFCM and Contractor for the consideration provided in this Contractor's Agreement, agree as follows:

ARTICLE 1. SCOPE OF WORK. The Work to be performed shall be in accordance with the Contract Documents prepared by _____ and entitled "_____."

The DFCM General Conditions ("General Conditions") dated May 25, 2005 on file at the office of DFCM and available on the DFCM website, are hereby incorporated by reference as part of this Agreement and are included in the specifications for this Project. All terms used in this Contractor's Agreement shall be as defined in the Contract Documents, and in particular, the General Conditions.

The Contractor Agrees to furnish labor, materials and equipment to complete the Work as required in the Contract Documents which are hereby incorporated by reference. It is understood and agreed by the parties hereto that all Work shall be performed as required in the Contract Documents and shall be subject to inspection and approval of DFCM or its authorized representative. The relationship of the Contractor to the DFCM hereunder is that of an independent Contractor.

ARTICLE 2. CONTRACT SUM. The DFCM agrees to pay and the Contractor agrees to accept in full performance of this Contractor's Agreement, the sum of _____ _____ DOLLARS AND NO CENTS ($_____.00), which is the base bid, and which sum also includes the cost of a 100% Performance Bond and a 100%

Payment Bond as well as all insurance requirements of the Contractor. Said bonds have already been posted by the Contractor pursuant to State law. The required proof of insurance certificates have been delivered to DFCM in accordance with the General Conditions before the execution of this Contractor's Agreement.

ARTICLE 3. TIME OF COMPLETION AND DELAY REMEDY. The Work shall be Substantially Complete within _____ (___) calendar days after the date of the Notice to Proceed. Contractor agrees to pay liquidated damages in the amount of $_____ per day for each day after expiration of the Contract Time until the Contractor achieves Substantial Completion in accordance with the Contract Documents, if Contractor's delay makes the damages applicable. The provision for liquidated damages is: (a) to compensate the DFCM for delay only; (b) is provided for herein because actual damages can not be readily ascertained at the time of execution of this Contractor's Agreement; (c) is not a penalty; and (d) shall not prevent the DFCM from maintaining Claims for other non-delay damages, such as costs to complete or remedy defective Work.

No action shall be maintained by the Contractor, including its or Subcontractor or suppliers at any tier, against the DFCM or State of Utah for damages or other claims due to losses attributable to hindrances or delays from any cause whatsoever, including acts and omissions of the DFCM or its officers, employees or agents, except as expressly provided in the General Conditions. The Contractor may receive a written extension of time, signed by the DFCM, in which to complete the Work under this Contractor's Agreement in accordance with the General Conditions.

ARTICLE 4. CONTRACT DOCUMENTS. The Contract Documents consist of this Contractor's Agreement, the Conditions of the Contract (DFCM General Conditions, Supplementary and other Conditions), the Drawings, Specifications, Addenda and Modifications. The Contract Documents shall also include the bidding documents, including the Notice to Contractors, Instructions to Bidders/ Proposers and the Bid/Proposal, to the extent not in conflict therewith and other documents and oral presentations that are documented as an attachment to the contract.

All such documents are hereby incorporated by reference herein. Any reference in this Contractor's Agreement to certain provisions of the Contract Documents shall in no way be construed as to lessen the importance or applicability of any other provisions of the Contract Documents.

ARTICLE 5. PAYMENT. The DFCM agrees to pay the Contractor from time to time as the Work progresses, but not more than once each month after the date of Notice to Proceed, and only upon Certificate of the A/E for Work performed during the preceding calendar month, ninety-five percent (95%) of the value of the labor performed and ninety-five percent (95%) of the value of materials furnished in place or on the site. The Contractor agrees to furnish to the DFCM invoices for materials purchased and on the site but not installed, for which the Contractor requests payment and agrees to

safeguard and protect such equipment or materials and is responsible for safekeeping thereof and if such be stolen, lost or destroyed, to replace same.

Such evidence of labor performed and materials furnished as the DFCM may reasonably require shall be supplied by the Contractor at the time of request for Certificate of Payment on account. Materials for which payment has been made cannot be removed from the job site without DFCM's written approval. Five percent (5%) of the earned amount shall be retained from each monthly payment. The retainage, including any additional retainage imposed and the release of any retainage, shall be in accordance with UCA 13-8-5 as amended. Contractor shall also comply with the requirements of UCA 13-8-5, including restrictions of retainage regarding subcontractors and the distribution of interest earned on the retention proceeds. The DFCM shall not be responsible for enforcing the Contractor's obligations under State law in fulfilling the retention law requirements with subcontractors at any tier.

ARTICLE 6. INDEBTEDNESS. Before final payment is made, the Contractor must submit evidence satisfactory to the DFCM that all payrolls, materials bills, subcontracts at any tier and outstanding indebtedness in connection with the Work have been properly paid. Final Payment will be made after receipt of said evidence, final acceptance of the Work by the DFCM as well as compliance with the applicable provisions of the General Conditions.

Contractor shall respond immediately to any inquiry in writing by DFCM as to any concern of financial responsibility and DFCM reserves the right to request any waivers, releases or bonds from Contractor in regard to any rights of Subcontractors (including suppliers) at any tier or any third parties prior to any payment by DFCM to Contractor.

ARTICLE 7. ADDITIONAL WORK. It is understood and agreed by the parties hereto that no money will be paid to the Contractor for additional labor or materials furnished unless a new contract in writing or a Modification hereof in accordance with the General Conditions and the Contract Documents for such additional labor or materials has been executed. The DFCM specifically reserves the right to modify or amend this Contractor's Agreement and the total sum due hereunder either by enlarging or restricting the scope of the Work.

ARTICLE 8. INSPECTIONS. The Work shall be inspected for acceptance in accordance with the General Conditions.

ARTICLE 9. DISPUTES. Any dispute, PRE or Claim between the parties shall be subject to the provisions of Article 7 of the General Conditions. DFCM reserves all rights to pursue its rights and remedies as provided in the General Conditions.

ARTICLE 10. TERMINATION, SUSPENSION OR ABANDONMENT. This Contractor's Agreement may be terminated, suspended or abandoned in accordance with the General Conditions.

ARTICLE 11. DFCM'S RIGHT TO WITHHOLD CERTAIN AMOUNT AND MAKE USE THEREOF. The DFCM may withhold from payment to the Contractor such amount as, in DFCM's judgment, may be necessary to pay just claims against the Contractor or Subcontractor at any tier for labor and services rendered and materials furnished in and about the Work. The DFCM may apply such withheld amounts for the payment of such claims in DFCM's discretion. In so doing, the DFCM shall be deemed the agent of Contractor and payment so made by the DFCM shall be considered as payment made under this Contractor's Agreement by the DFCM to the Contractor. DFCM shall not be liable to the Contractor for any such payment made in good faith. Such withholdings and payments may be made without prior approval of the Contractor and may be also be prior to any determination as a result of any dispute, PRE, Claim or litigation.

ARTICLE 12. INDEMNIFICATION. The Contractor shall comply with the indemnification provisions of the General Conditions.

ARTICLE 13. SUCCESSORS AND ASSIGNMENT OF CONTRACT. The DFCM and Contractor, respectively bind themselves, their partners, successors, assigns and legal representatives to the other party to this Agreement, and to partners, successors, assigns and legal representatives of such other party with respect to all covenants, provisions, rights and responsibilities of this Contractor's Agreement. The Contractor shall not assign this Contractor's Agreement without the prior written consent of the DFCM, nor shall the Contractor assign any moneys due or to become due as well as any rights under this Contractor's Agreement, without prior written consent of the DFCM.

ARTICLE 14. RELATIONSHIP OF THE PARTIES. The Contractor accepts the relationship of trust and confidence established by this Contractor's Agreement and covenants with the DFCM to cooperate with the DFCM and A/E and use the Contractor's best skill, efforts and judgment in furthering the interest of the DFCM; to furnish efficient business administration and supervision; to make best efforts to furnish at all times an adequate supply of workers and materials; and to perform the Work in the best and most expeditious and economic manner consistent with the interests of the DFCM.

ARTICLE 15. AUTHORITY TO EXECUTE AND PERFORM AGREEMENT. Contractor and DFCM each represent that the execution of this Contractor's Agreement and the performance thereunder is within their respective duly authorized powers.

ARTICLE 16. ATTORNEY FEES AND COSTS. Except as otherwise provided in the dispute resolution provisions of the General Conditions, the prevailing party shall be entitled to reasonable attorney fees and costs incurred in any action in the District Court and/or appellate body to enforce this Contractor's Agreement or recover damages or any other action as a result of a breach thereof.

IN WITNESS WHEREOF, the parties hereto have executed this Contractor's Agreement on the day and year stated hereinabove.

CONTRACTOR: _____

_____
Signature Date

Title: _____

State of _____)
)
County of _____) _____
Please type/print name clearly

On this ____ day of _____, 20____, personally appeared before me, _____, whose identity is personally known to me (or proved to me on the basis of satisfactory evidence) and who by me duly sworn (or affirmed), did say that he (she) is the _____ (title or office) of the firm and that said document was signed by him (her) in behalf of said firm.

_____
Notary Public

(SEAL)

My Commission Expires _____

APPROVED AS TO AVAILABILITY OF FUNDS:

_____
Financial Manager, Date
Division of Facilities Construction and Management

DIVISION OF FACILITIES CONSTRUCTION AND MANAGEMENT

_____
_____ Date
Manager -
Capital _____

APPROVED AS TO FORM:
ATTORNEY GENERAL
May 25, 2005
By: Alan S. Bachman
Asst Attorney General

APPROVED FOR EXPENDITURE:

_____
Division of Finance Date

PERFORMANCE BOND

(Title 63, Chapter 56, U. C. A. 1953, as Amended)

That _____ hereinafter referred to as the "Principal" and _____, a corporation organized and existing under the laws of the State of _____, with its principal office in the City of _____ and authorized to transact business in this State and U. S. Department of the Treasury Listed (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); hereinafter referred to as the "Surety," are held and firmly bound unto the State of Utah, hereinafter referred to as the "Obligee, " in the amount of _____ _____ DOLLARS ($_____) for the payment whereof, the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract with the Obligee, dated the _____ day of _____, 20____, to construct _____ in the County of _____, State of Utah, Project No. _____, for the approximate sum of _____ _____ Dollars ($_____), which Contract is hereby incorporated by reference herein.

NOW, THEREFORE, the condition of this obligation is such that if the said Principal shall faithfully perform the Contract in accordance with the Contract Documents including, but not limited to, the Plans, Specifications and conditions thereof, the one year performance warranty, and the terms of the Contract as said Contract may be subject to Modifications or changes, then this obligation shall be void; otherwise it shall remain in full force and effect.

No right of action shall accrue on this bond to or for the use of any person or corporation other than the state named herein or the heirs, executors, administrators or successors of the Owner.

The parties agree that the dispute provisions provided in the Contract Documents apply and shall constitute the sole dispute procedures of the parties.

PROVIDED, HOWEVER, that this Bond is executed pursuant to the Provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to the same extent as if it were copied at length herein.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this _____ day of _____, 20_____.

WITNESS OR ATTESTATION:

_____

PRINCIPAL:

_____

By: _____

(Seal)

Title: _____

WITNESS OR ATTESTATION:

_____

SURETY:

_____

By: _____

Attorney-in-Fact (Seal)

STATE OF _____)

) ss.

COUNTY OF _____)

On this _____ day of _____, 20____, personally appeared before me _____, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney in-fact of the above-named Surety Company and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this _____ day of _____, 20_____.

My commission expires: _____

Resides at: _____

_____

NOTARY PUBLIC

Agency: _____

Agent: _____

Address: _____

Phone: _____

Approved As To Form: May 25, 2005

By Alan S. Bachman, Asst Attorney General

DFCM FORM 1b 052505

PAYMENT BOND

(Title 63, Chapter 56, U. C. A. l953, as Amended)

KNOW ALL PERSONS BY THESE PRESENTS:

That _____ hereinafter referred to as the "Principal," and _____ _____, a corporation organized and existing under the laws of the State of _____authorized to do business in this State and U. S. Department of the Treasury Listed (Circular 570, Companies Holding Certificates of Authority as Acceptable Securities on Federal Bonds and as Acceptable Reinsuring Companies); with its principal office in the City of _____, hereinafter referred to as the "Surety," are held and firmly bound unto the State of Utah hereinafter referred to as the "Obligee," in the amount of _____ Dollars ($_____) for the payment whereof, the said Principal and Surety bind themselves and their heirs, administrators, executors, successors and assigns, jointly and severally, firmly by these presents.

WHEREAS, the Principal has entered into a certain written Contract with the Obligee, dated the _____ day of _____, 20____, to construct _____ in the County of _____, State of Utah, Project No. _____ for the approximate sum of _____ _____ Dollars ($_____), which contract is hereby incorporated by reference herein.

NOW, THEREFORE, the condition of this obligation is such that if the said Principal shall pay all claimants supplying labor or materials to Principal or Principal's Subcontractors in compliance with the provisions of Title 63, Chapter 56, of Utah Code Annotated, l953, as amended, and in the prosecution of the Work provided for in said Contract, then, this obligation shall be void; otherwise it shall remain in full force and effect.

That said Surety to this Bond, for value received, hereby stipulates and agrees that no changes, extensions of time, alterations or additions to the terms of the Contract or to the Work to be performed thereunder, or the specifications or drawings accompanying same shall in any way affect its obligation on this Bond, and does hereby waive notice of any such changes, extensions of time, alterations or additions to the terms of the Contract or to the Work or to the specifications or drawings and agrees that they shall become part of the Contract Documents.

PROVIDED, HOWEVER, that this Bond is executed pursuant to the provisions of Title 63, Chapter 56, Utah Code Annotated, 1953, as amended, and all liabilities on this Bond shall be determined in accordance with said provisions to the same extent as if it were copied at length herein.

IN WITNESS WHEREOF, the said Principal and Surety have signed and sealed this instrument this _____ day of _____, 20____.

WITNESS OR ATTESTATION:

_____

PRINCIPAL:

_____

By: _____

(Seal)

Title: _____

WITNESS OR ATTESTATION:

_____

SURETY:

_____

By: _____

Attorney-in-Fact (Seal)

STATE OF _____)
) ss.
COUNTY OF _____)

On this _____ day of _____, 20_____, personally appeared before me _____ _____, whose identity is personally known to me or proved to me on the basis of satisfactory evidence, and who, being by me duly sworn, did say that he/she is the Attorney-in-fact of the above-named Surety Company, and that he/she is duly authorized to execute the same and has complied in all respects with the laws of Utah in reference to becoming sole surety upon bonds, undertakings and obligations, and that he/she acknowledged to me that as Attorney-in-fact executed the same.

Subscribed and sworn to before me this _____ day of _____, 20_____.

My commission expires: _____

Resides at: _____

_____

NOTARY PUBLIC

Agency: _____
Agent: _____
Address: _____
Phone: _____

Approved As To Form: May 25, 2005
By Alan S. Bachman, Asst Attorney General

DFCM FORM 1b 052505

CHANGE ORDER #_____

CONTRACTOR:

ARCHITECT:

AGENCY OR INSTITUTION:
PROJECT NAME:
PROJECT NUMBER:
CONTRACT NUMBER:
DATE:

CONSTRUCTION CHANGE DIRECTIVE NO.	PROPOSAL REQUEST NO.	AMOUNT		DAYS	
		INCREASE	DECREASE	INCREASE	DECREASE

	Amount	Days	Date
ORIGINAL CONTRACT			
TOTAL PREVIOUS CHANGE ORDERS			
TOTAL THIS CHANGE ORDER			
ADJUSTED CONTRACT			

DFCM and Contractor agree that the terms, contract sum, scope of the Work and time specified in this Change Order shall constitute the full accord and satisfaction, and complete adjustment to the Contract and includes all direct and indirect costs and effects related to, incidental to, and/or reasonably implied from such change in the contract terms, sum, scope of the Work and time.

Contractor:_____
Date

Architect/Engineer:_____
Date

Agency or Institution:_____
Date

DFCM: _____
Date

Funding Verification:_____
Date

CERTIFICATE OF SUBSTANTIAL COMPLETION

PROJECT _____ PROJECT NO: _____

AGENCY/INSTITUTION _____

AREA ACCEPTED _____

The Work performed under the subject Contract has been reviewed on this date and found to be Substantially Completed as defined in the General Conditions; including that the construction is sufficiently completed in accordance with the Contract Documents, as modified by any change orders agreed to by the parties, so that the State of Utah can occupy the Project or specified area of the Project for the use for which it is intended.

The DFCM accepts the Project or specified area of the Project as Substantially Complete and will assume full possession of the Project or specified area of the Project at _____ (time) on _____ (date).

The DFCM accepts the Project for occupancy and agrees to assume full responsibility for maintenance and operation, including utilities and insurance, of the Project subject to the itemized responsibilities and/or exceptions noted below:

_____

_____

A list of items to be completed or corrected is attached hereto. The failure to include an item on it does not alter the responsibility of the Contractor to complete all the Work in accordance with the Contract Documents, including authorized changes thereof.

The Contractor shall complete or correct the Work on the list of items appended hereto within _____ calendar days from the above date of issuance of this Certificate. The amount withheld pending completion of the list of items noted and agreed to shall be: $_____.

_____ by: _____

CONTRACTOR (include name of firm) DATE

_____ by: _____

A/E DATE

_____ by: _____

USING INSTITUTION OR AGENCY DATE

_____ by: _____

DFCM DATE

cc: Parties Noted
DFCM, Director

PROJECT MANUAL

FOR

SNOW COLLEGE RICHFIELD
PARKING LOT

DFCM Project #00016710

AUGUST 2005

Jones & DeMille Engineering

1535 South 100 West
Richfield, UT 84701
PH: 435-896-8266
FAX: 435-896-8268

S P E C I F I C A T I O N S
T A B L E of C O N T E N T S

SECTION 01315

PROJECT COORDINATION AND MEETINGS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Coordination.

B. Field engineering.

C. Progress meetings.

1.2 COORDINATION

A. Coordinate scheduling, submittals, and related work items to ensure efficient and orderly sequence of construction elements.

B. Provide written notification to Owner at least 48 hours prior to starting construction.

C. Proceed with Work in timely manner to minimize delays and inconveniences.

D. Coordinate types of equipment used with site conditions encountered.

E. Coordinate electrical work with Owner.

1.3 FIELD ENGINEERING

A. Contractor shall provide construction staking as required to complete Work.

B. Verify locations of stakes prior to starting Work.

1.4 PROGRESS MEETINGS

A. Owner will schedule and administer progress meetings throughout progress of Work as needed.

B. Attendance Required: Job Superintendent, Owner, and major Subcontractors and suppliers as appropriate to agenda topics for each meeting.

C. Agenda:
   1. Review of Work Progress.
   2. Field observations, problems, and decisions.
   3. Identification of problems which impede planning progress.
   4. Maintenance of progress schedule.
   5. Other business relating to Work.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01450

QUALITY CONTROL AND ACCEPTANCE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Control of Work.

B. Quality control testing.

C. Nonconforming Work.

1.2 CONTROL OF WORK

A. Monitor quality control over suppliers, manufactures, Products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply with specified standards as minimum quality of Work, except where more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

C. Perform Work by persons qualified to produce required quality.

1.3 QUALITY CONTROL TESTING

A. Quality control testing indicated in individual sections is to be performed by Contractor or Contractor's representative. Include cost in bid.

B. Perform quality control testing at minimum frequency indicated. Perform additional tests as required to ensure materials and Work are in accordance with requirements of Contract Documents. Perform testing during progress of Work, unless indicated otherwise.

C. Submit one copy of quality control test reports to Owner.

1.4 NONCONFORMING WORK

A. Nonconforming work, whether discovered by Contractor or Owner, shall be corrected or replaced at no cost to Owner.

B. Materials or work, which fail quality control testing, shall be rejected.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

Not Used.

END OF SECTION

SECTION 01500

TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Water control.

B. Dust control.

C. Barriers and traffic regulation.

D. Protection of installed work.

E. Progress cleaning and waste removal.

F. Removal of facilities and controls.

PART 2 PRODUCTS

2.1 SIGNS, SIGNALS, AND DEVICES

A. Traffic Control Signs, Informational Signs, Cones, Drums, Flares, and Lights: Conform to Manual on Uniform Traffic Control Devices (MUTCD).

PART 3 EXECUTION

3.1 WATER CONTROL

A. Grade construction areas to drain. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.

B. Protect construction areas from puddling or running water. Provide water barriers as required to protect construction areas from soil erosion.

C. Provide temporary drainage for storm and irrigation water. Make repairs to correct any damage caused by temporary or lack of temporary drainage.

3.2 DUST CONTROL

A. Provide adequate water supply for dust control at any time.

B. Do not waste water or over saturate construction areas.

3.3 BARRIERS AND TRAFFIC REGULATION

A. Provide barricades, barriers, and signs to prevent unauthorized entry to construction areas and to protect public.

B. Provide barriers to protect existing facilities and adjacent properties from damage from construction operations.

C. Provide warning, detour, and other signs to direct traffic safely through or around construction areas.

D. Relocate barricades, barriers, and signs as Work progresses to maintain effective traffic control and public protection.

E. Provide trained and equipped flag persons to regulate traffic when construction operations encroach on traffic lanes.

F. Use flares and lights during hours of low visibility to delineate traffic lanes, guide traffic, and protect public.

G. Remove barriers, barricades, signs and other traffic control devices when no longer required.

3.4 PROTECTION OF INSTALLED WORK

A. Protect installed Work and provide special protection where specified in individual specification sections.

B. Provide temporary and removable protection for installed materials. Control activity in immediate work area to prevent damage.

3.5 PROGRESS CLEANING AND WASTE REMOVAL

A. Maintain areas free of waste materials, debris, and rubbish. Maintain site in clean and orderly condition.

B. Collect and remove waste materials, debris, and rubbish from site periodically and dispose off-site.

C. Sweep and clean paved areas.

3.6 REMOVAL OF FACILITIES AND CONTROLS

A. Remove temporary utilities, equipment, facilities, materials, signs, controls, prior to final inspection.

B. Clean and repair damage caused by installation or use of temporary work.

C. Restore areas and facilities used during construction to equal or better condition as existed prior to construction.

END OF SECTION

SECTION 02225

SELECTIVE SITE DEMOLITION

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Removal of miscellaneous items.

B. Saw cutting.

C. Disposal of demolition materials.

1.2 RELATED SECTIONS

A. Section 01500 – Temporary Facilities & Controls.

B. Section 02315 – Excavation & Embankment.

1.3 REGULATORY REQUIREMENTS

A. Submit plan for disposal of construction materials to local health department for approval. Revise plan as required for approval.

B. Submit to Owner copy of letter from health department indicating that disposal plan has been approved.

PART 2 PRODUCTS

Not Used.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify location, material and depth of items to be removed.

3.2 PREPARATION

A. Provide, erect, and maintain temporary barriers and safety devices.

B. Provide water to control and minimize dust.

C. Locate and identify utilities.

D. Coordinate demolition with Owner.

3.3 DEMOLITION

A. Excavate as needed to remove items indicated on Drawings.

B. Saw cut asphalt pavement where indicated. Provide cut through full depth of pavement and in straight line. If pavement is cracked, broken, or deteriorated, make cut so defective area is removed. Remove pavement and dispose off site.

C. Saw cut other materials as required for removal.

D. Move wood poles during construction and place along south edge of new parking lot after construction is complete.

E. Dispose of non-salvaged materials off site.

F. Backfill excavated areas with excavated material in layers not exceeding 12 inches non-compacted depth.

G. Compact backfill material to 96 percent of maximum laboratory density.

3.4 PROTECTION

A. Protect existing utilities and other items which are to remain from damage. If damaged, restore or repair to equal or better condition as existed prior to construction.

END OF SECTION

SECTION 02315

EXCAVATION AND EMBANKMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Excavating materials for roadways and parking lots.

B. Disposal of unsuitable and excess excavated materials.

C. Subgrade preparation.

1.2 RELATED SECTIONS

A. Section 01500 - Temporary Facilities and Controls.

B. Section 02225 – Selective Site Demolition.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):
   1. AASHTO M145 - The Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
   2. AASHTO T99 - Moisture-Density relations of Soils Using a 5.5 lb (2.5 kg) Rammer and a 12-in. (305 mm) Drop.
   3. AASHTO T180 - Moisture-Density relations of Soils Using a 10-lb. (4.54 kg) Rammer and an 18 in. (457 mm) Drop.

B. American Society for Testing and Materials (ASTM):
   1. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

1.4 DEFINITIONS

A. Clearing: Removal and disposal of logs, limbs, sticks, vegetation, rubbish, debris, and other material on ground surface.

B. Grubbing: Removal and disposal of roots, buried logs, debris, and other underground material.

C. Soil Classification: AASHTO M145.

PART 2 PRODUCTS

Not used.

PART 3 EXECUTION

3.1 PREPARATION

A. Identify required lines, grades, and elevations.

B. Locate, identify, and protect utilities that remain from damage.

3.2 CLEARING AND GRUBBING

A. Clear and grub all vegetation and debris within site.

B. Dispose of material off site.

C. Backfill holes, cuts, and depressions resulting from clearing and grubbing. Compact to density of surrounding ground.

3.3 EXCAVATION

A. Excavate subsoil as staked and indicated on Drawings. Excavate as needed for construction and to provide drainage.

B. Remove and dispose of unsuitable excavated materials off site.

C. Use suitable excavated materials for embankments. Grade to blend in with existing contours and provide positive drainage. Dispose of surplus materials off site.

D. Compact subgrade to 96 percent of maximum laboratory density. Maintain optimum moisture content.

E. If soft areas appear, scarify and aerate subgrade for approximately two weeks to remove excess moisture. After aerating subgrade, recompact. If soft areas persist, notify Owner.

F. Finish excavated areas to reasonably smooth and uniform surface.

3.4 EMBANKMENT

A. Use suitable excavated materials to build embankments. Do not use frozen materials, organic materials, rubbish, debris, or other objectionable materials.

B. If embankment height is 6 feet or less and underlying ground consists of loose material, scarify and compact top 8 inches of ground to at least 90 percent of maximum laboratory density.

C. Do not place embankment over porous, wet, frozen, or spongy surfaces.

D. Uniformly spread embankment materials in layers not exceeding 12 inches non-compacted depth. If tests indicate unsatisfactory density, reduce layer thickness.

E. Compact each layer to at least 96 percent of maximum laboratory density.

F. Maintain optimum moisture content of embankment materials.

G. Do not use rocks or pavement materials over 6 inches in largest dimension. Mix rocks with finer materials to minimize voids.

3.5 FINISHING

A. Make grade changes gradual. Blend slopes into level areas. Grade to blend in with existing contours and provide drainage. Finish disturbed areas and embankment to reasonably smooth and uniform surface.

B. After improvements have been constructed, grade shoulders to blend in with existing contours and features.

3.6 TOLERANCES

A. Moisture Content: Plus or minus 2 percent of optimum.

B. Finish Subgrade Surface: Plus or minus 0.1 feet of required elevation.

3.7 QUALITY CONTROL TESTING

A. Perform density tests in accordance with ASTM D2922. Determine maximum laboratory density in accordance with AASHTO T180, Method D for A-1 soils and AASHTO T99, Method D for other soils.

1. Frequency of Tests: Take minimum of 1 random density test for each 1,000 square yards.
2. Acceptance: Average density is 96 percent or greater. Reject tests less than 92 percent.
3. If tests indicate Work is not acceptable, re-compact and retest.

3.8 PROTECTION

A. Protect features remaining.

B. Protect bench marks, survey control points, existing structures, fences, paving, and curbs from displacement and damage.

C. Maintain adequate drainage and keep excavated areas free of standing water.

D. Maintain subgrade until next layer is placed.

END OF SECTION

SECTION 02321

TRENCHING

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Excavating trenches for utilities.

B. Backfill and compaction for utility trenches.

1.2 RELATED SECTIONS

A. Section 01500 - Temporary Facilities & Control.

B. Section 16000 - Electrical.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):
   1. AASHTO M145 - The Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
   2. AASHTO T99 - Moisture-Density Relations of Soils Using a 5.5-lb. (2.5 kg) Rammer and a 12-in. (305 mm) Drop.
   3. AASHTO T180 - Moisture-Density Relations of Soils Using a 10-lb. (4.54 kg) Rammer and an 18-in. (457 mm) Drop.

B. American Society for Testing and Materials (ASTM):
   1. ASTM D2922 - Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

1.4 DEFINITIONS

A. Utility: Any buried pipe, duct, conduit, cable and appurtenance.

B. Soil Classification: AASHTO M145.

1.5 SUBMITTALS

A. Test Results: Submit proctor and density test results to Owner.

PART 2 PRODUCTS

2.1 MATERIALS

A. Backfill: Excavated material free from rubbish, debris, organic material, frozen material, or other objectionable material.
   1. Rocks originating from trench and not exceeding 12 inches.
   2. Broken portland cement concrete and asphalt concrete pavement originating from trench and not exceeding 6 inches.
   3. If excavated material is not suitable for backfill, import granular material.

PART 3 EXECUTION

3.1 PREPARATION

A. Identify required location and elevation of utility lines.

B. Protect plant life, lawns, fences, existing structures, sidewalks, paving, curbs, and other features remaining.

C. Protect bench marks and control points.

D. Locate, maintain and protect above and below grade utilities which are to remain.

3.2 EXCAVATION

A. Excavate subsoil required for installation of utility lines.

B. Cut trenches sufficiently wide to enable installation of utility and appurtenances and allow inspection. Cut slope of trench walls to meet Utah State Industrial Commission and OSHA requirements and soil conditions. Provide shoring where needed. Take all necessary precautions to protect employees in or around excavations.

C. Remove water from trench.

D. Hand trim excavation for bell and spigot pipe joints. Remove materials that interfere with Work.

E. Remove lumped subsoil, boulders, and rock.

F. Correct areas over excavated and recompact.

G. Stockpile excavated material along side of trench or in other areas to minimize damage to improvements.

3.3 BACKFILL

A. After utilities, appurtenances, and bedding have been installed, backfill trenches. Do not backfill over porous, wet, frozen, or spongy subgrade surfaces.

B. Backfill in layers not exceeding 12 inches non-compacted depth. Reduce layer thickness if tests show unsatisfactory density. Use hand-operated compaction equipment in areas inaccessible to self-propelled compaction equipment.

C. Maintain moisture content of fill materials within plus or minus 2 percent of optimum to attain required compaction density.

D. Do not place rocks larger than 2 ½ inches in backfill placed within 12 inches of pavement subgrade. Mix rocks with finer material to minimize voids.

E. Employ placement method that does not disturb or damage utilities.

F. Grade surplus material to blend in with existing contours or remove surplus materials from site if necessary.

G. Restore damaged surface improvements. Restore improvements to equal or better condition as existed prior to construction.

3.4 TOLERANCES

A. Top Surface of Backfilling Under Paved Areas: Plus or minus ½ inch from required elevations.

B. Top Surface of General Backfilling: Plus or minus 1 inch from required elevations.

3.5 QUALITY CONTROL TESTING

A. Perform compaction tests in accordance with ASTM D2922. Determine maximum laboratory density in accordance with AASHTO T180, Method D for A-1 soils and AASHTO T99, Method D for other soils.
   1. Frequency: Random density tests. Provide proctors for each soil type encountered.
   2. Acceptance: Average density equals or exceeds 96 percent. Reject single density tests less than 92 percent.
   3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.6 PROTECTION OF FINISHED WORK

A. Protect finished Work.

B. Reshape and re-compact fill areas subjected to vehicular traffic during construction.

END OF SECTION

SECTION 02501

RECONSTRUCT UTILITY BOX

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Reconstruction of water valve boxes, manholes, and other utility boxes.

1.2 RELATED SECTIONS

A. Section 03200 - Concrete Reinforcement.

B. Section 03300 - Cast-In-Place Concrete.

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. ASTM C94 - Specification for Ready - Mixed Concrete.
   2. ASTM C478 - Precast Reinforced Concrete Manhole Sections.

PART 2 PRODUCTS

2.1 MATERIALS

A. Concrete: Class AA (AE) in accordance with Section 03300.

B. Reinforcing Steel: In accordance with Section 03200.

C. Grade or Extension Rings: Precast reinforced concrete in accordance with ASTM C478 or cast iron.

D. Crushed Rock: 1 inch maximum size material.

PART 3 EXECUTION

3.1 PREPARATION

A. Prior to placing pavement, measure and record location of utility boxes from reference points.

B. Reconstruct utility boxes after pavement has been placed to finish grade.

3.2 CONSTRUCTION

A. Remove asphalt concrete pavement around utility box.

B. Remove cover and frame from utility box.

C. Add or remove grade rings as necessary to adjust manhole frame to finish grade.

D. For water valve boxes, raise or lower adjustable sleeve.

E. Repair any damage caused to existing utility box.

F. Reinstall frame and cover.

3.3 CONCRETE COLLAR

A. Compact disturbed subgrade material to 96 percent of maximum laboratory density.

B. If needed, backfill with crushed rock.

C. Place reinforcing steel.

D. Place and consolidate concrete. Match pavement surface and utility box elevation.

3.4 TOLERANCES

A. Cover Elevation: Plus or minus 1/8 inch of finish grade.

3.5 PROTECTION

A. Protect concrete from damage until sufficient strength is obtained to support traffic loads.

B. Do not allow soil, rocks, concrete, or other materials to enter utility box. Clean out debris from utility box.

END OF SECTION

SECTION 02721

GRANULAR BORROW

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Granular Borrow.

1.2 RELATED SECTIONS

A. Section 02722 – Untreated Base Course.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO).
   1. AASHTO M145 - The Classification of Soils and Soil-Aggregate Mixtures for Highway Construction Purposes.
   2. AASHTO T180 - Moisture-Density Relations of Soils Using a 10-lb. (4.54 kg) Rammer and an 18 in. (457 mm) Drop.
   3. AASHTO T193 - The California Bearing Ratio.

B. American Society for Testing and Materials (ASTM):
   1. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

1.4 DEFINITIONS

A. Lot: One day's production.

1.5 SUBMITTALS

A. Test Results: Submit density test results to Owner.

PART 2 PRODUCTS

2.1 MATERIALS

A. Granular Borrow: Natural gravel or crushed rock.
   1. Classification: AASHTO M145, A-1-a through A-I-b.
   2. Gradation: 6 inches maximum.

PART 3 EXECUTION

3.1 PREPARATION

A. Correct irregularities in subgrade gradient and elevation by scarifying, reshaping, and re-compacting.

B. Do not place granular borrow on soft, muddy, or frozen surfaces.

3.2 PLACEMENT

A. Place granular borrow in layers not exceeding 12 inches. Reduce layer thickness if necessary for compaction.

B. Place to thickness, elevation, and grades indicated on Drawings.

C. Compact to 96 percent of maximum laboratory density.

D. Maintain optimum moisture content. If excess water is apparent, aerate to reduce moisture content. If too dry, add water and mix uniformly.

3.3 TOLERANCES

A. Moisture Content: Plus or minus 2 percent of optimum.

B. Compacted Thickness: Plus or minus ½ inch. If thickness exceeds tolerance, remove excess material and re-compact. If thickness is less than tolerance, scarify, add material, and re-compnact.

3.4 QUALITY CONTROL TESTING

A. Perform density testing in accordance with ASTM D2922. Determine maximum laboratory density according to AASHTO T180, Method D.
   1. Frequency of Tests: Take minimum of 1 random density test for each sublot of 1,000 square yards for each layer placed.
   2. Acceptance: Average density is 96 percent or greater for each lot. Reject sublot tests less than 92 percent.
   3. If tests indicate Work is not acceptable, re-compact, and retest. If necessary, remove and replace Work.

3.5 PROTECTION

A. Maintain adequate drainage.

B. Maintain granular borrow until next layer is placed.

END OF SECTION

SECTION 02722

UNTREATED BASE COURSE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Untreated base course.

1.2 RELATED SECTIONS

A. Section 02742 - Asphalt Concrete Pavement.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):
   1. AASHTO T11 - Amount of Material Finer Than 0.075 mm Sieve in Aggregate.
   2. AASHTO T19 - Unit Weight and Voids in Aggregate.
   3. AASHTO T27 - Sieve Analysis of Fine and Coarse Aggregates.
   4. AASHTO T90 - Determining the Plastic Limit and Plasticity Index of Soils.
   5. AASHTO T96 - Resistance to Abrasion of Small Size Coarse Aggregate by Use of the Los Angeles Machine.
   6. AASHTO T180 - Moisture-Density Relations of Soils Using a 10-lb.(4.54 kg) Rammer and an 18-in. (457mm) Drop.

B. American Society for Testing and Materials (ASTM):
   1. ASTM D2922 - Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth).

1.4 SUBMITTALS

A. Test Results: Submit gradation and density test results to Owner.

1.5 QUALITY ASSURANCE

A. Obtain materials from same source throughout.

PART 2 PRODUCTS

2.1 MATERIALS

A. Untreated Base Course: Natural gravel, crushed rock, crushed slag, or existing subbase meeting following requirements:
   1. Aggregate Passing No. 40 Sieve: AASHTO T90, non-plastic.
   2. Wear: AASHTO T96, not exceed 50 percent.
   3. Dry-Rodded Unit Weight: AASHTO T19, not less than 75 pounds per cubic foot.
   4. Gradation: AASHTO T27 & T11, 3/4 or 1 inch maximum per Table 02722-1.

Table 02722-1
Gradation Limits

Sieve Size	Percent Passing of Total Aggregate (Dry Weight)	
	3/4 inch	1 inch
1 inch	-	100
3/4 inch	100	-
½ inch	-	79-91
3/8 inch	78-92	-
No. 4	55-67	49-61
No. 16	28-38	27-35
No. 200	7-11	7-11

PART 3 EXECUTION

3.1 PREPARATION

A. Correct irregularities in subgrade gradient and elevation by scarifying, reshaping, and re-compacting.

B. Do not place untreated base course on soft, muddy, or frozen surfaces.

C. Do not place untreated base course until subgrade is accepted.

3.2 AGGREGATE PLACEMENT

A. Spread untreated base course over prepared subgrade.

B. Maintain optimum moisture content of untreated base course. If excess water is apparent, aerate to reduce moisture content. If too dry, add water and mix uniformly.

C. Place aggregate in maximum 6 inch compacted layers. If untreated base course is placed in successive layers, do not place next layer until previous layer has been tested and accepted.

D. Level and contour surfaces to elevations and gradients as indicated.

E. Compact with self-propelled compaction equipment. Use hand-operated compaction equipment in areas inaccessible to self-propelled compaction equipment.

3.3 TOLERANCES

A. Moisture Content: Plus or minus 2 percent of optimum.

B. Compacted Thickness: Plus or minus ½ inch. If thickness exceeds tolerance, remove excess material and re-compact. If thickness is less than tolerance, scarify, add material, and re-compact.

C. Surface Smoothness: Plus or minus 3/8 inch measured with 10 foot straight edge.

3.4 QUALITY CONTROL TESTING

A. Perform density testing in accordance with ASTM D2922. Determine maximum laboratory density in accordance with AASHTO T180, Method D.
   1. Frequency: Minimum of 1 random density test for each 1,000 square yards.
   2. Acceptance: Average density is 96 percent or greater. Reject tests less than 92 percent.
   3. If tests indicate Work is not acceptable, recompact, and retest. If necessary, remove and replace work.

B. Perform gradation tests in accordance with AASHTO T27 and T11.
   1. Take random samples from windrow or on grade prior to compaction.

2. Frequency of Samples: Take at least one random sample.
3. If tests indicate materials are not acceptable, make adjustments in production. If necessary, remove and replace work.

3.5 PROTECTION

A. Maintain untreated base course until surface course is placed.

END OF SECTION

SECTION 02742

ASPHALT CONCRETE PAVEMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Tack coat.

B. Asphalt concrete pavement.

1.2 RELATED SECTIONS

A. Section 01500 - Construction Facilities and Temporary Controls.

B. Section 02225 - Selective Site Demolition.

C. Section 02722 - Untreated Base Course.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):
   1. AASHTO M140 - Emulsified Asphalt.
   2. AASHTO M226 - Viscosity Graded Asphalt Cement.
   3. AASHTO M303 - Lime for Asphalt Mixtures.
   4. AASHTO T11 - Amount of Material Finer than 0.075 mm Sieve in Aggregate.
   5. AASHTO T19 - Unit Weight and Voids in Aggregate.
   6. AASHTO T27 - Sieve Analysis of Fine and Course Aggregate.
   7. AASHTO T90 - Determining the Plastic Limit and Plasticity Index of Soils.
   8. AASHTO T96 - Resistance to Abrasion of Small Size Coarse Aggregate by Use of the Los Angeles Machine.
   9. AASHTO T104 - Soundness of Aggregate by Use of Sodium Sulfate or Magnesium Sulfate.
   10. AASHTO T176 - Plastic Fines in Graded Aggregates and Soils by Use of the Sand Equivalent Test.

B. American Society for Testing and Materials (ASTM):
   1. ASTM D6307 - Asphalt Content of Hot Mix Asphalt by Ignition Method.

C. The Asphalt Institute (TAI):
   1. TAI MS-2 - Mix Design Methods for Asphalt Concrete and Other Hot Mix Types.

1.4 DEFINITIONS

A. Lot: One day's production.

1.5 SUBMITTALS

A. Test Results: Submit gradation, oil content and density test results to Owner. Provide target gradation and asphalt cement content to testing laboratory to include with test results.

1.6 QUALITY ASSURANCE

A. Obtain materials from same source throughout.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not place asphalt concrete pavement when ambient air or base surface temperature in shade is less than 50 degrees F.

B. Do not place asphalt concrete pavement when base has free surface water or base is over saturated.

C. Do not place asphalt concrete pavement during adverse weather conditions such as rain.

PART 2 PRODUCTS

2.1 MATERIALS

A. Asphalt Concrete Pavement:
   1. Asphalt Cement: PG58-22 in accordance with AASHTO M226, Table 2.
   2. Hydrated Lime: AASHTO M303, use minimum 1 percent of dry weight of aggregate.
      a) Chemical Limits:
         1. Hydrated Alkalinity: Minimum 90 percent by weight $CaCOH_2$.
         2. Hydrated Lime Content: Maximum 7 percent by weight CaO.
         3. Free Water Content: Maximum 3 percent by weight.

b) Physical Requirements:
   1. Residue Retained on No. 30 Sieve: Maximum 2 percent by weight.
   2. Residue Retained on No. 200 Sieve: Maximum 12 percent by weight.

3. Aggregate: Natural gravel, crushed rock, or slag with uniform density and quality. Gradation per Table 02742-1.
   a) Course Aggregate: Clean, hard, durable, and sound fragments free from organic matter or other detrimental substances.
      1. Retained on No. 4 sieve.
      2. All Rounded Particles: Maximum 50 percent by weight.
   b) Fine Aggregate: Clean, hard grained, and angular.
      1. Pass No. 4 sieve.
      2. Non-plastic in accordance with AASHTO T90.
      3. Vegetable Matter or Other Detrimental Substances: Maximum 2 percent by weight.
      4. Dry-Rodded Unit Weight: AASHTO T19, minimum 75 pounds per cubic foot.
      5. Wear: AASHTO T96, maximum 40 percent.
      6. Weight Loss: AASHTO T104, maximum 16 percent by weight when subjected to five cycles of sodium sulfate.
      7. Sand Equivalent: AASHTO T176, minimum 40.

Table 02742-1
GRADATION LIMITS FOR MIX DESIGN

Sieve Size	Percent of Total Aggregate Passing (Dry Weight)
½ inch	100
No. 4	60-80
No. 16	28-42
No. 50	11-23
No. 200	5-9

B. Tack Coat: AASHTO M140, grade SS-1H or SS-1, emulsified asphalt.

2.2 EQUIPMENT

A. Asphalt Paver: Use self-propelled paver with screed unit.

B. Rollers: Use rubber tire and steel self-propelled rollers in sufficient number to keep up with paver. Use release agent other than diesel.

2.3 MIXES

A. Develop mix design in accordance with TAI MS-2, Marshall Method or Superpave Volumetric Mix Design.
   1. Determine optimum asphalt content by test data curves.
   2. Use test samples containing 0.5 percent increments of asphalt content.
   3. Include minimum of 2 test samples above and below optimum asphalt content.

B. Mix Design Requirements:
   1. Marshall Stability: Minimum 1,800 pounds.
   2. Flow (0.01 inch): 10 to 18.
   3. Air Voids: 3 to 5 percent.
   4. Voids in Mineral Aggregate: Minimum 14 percent.
   5. Index of Retained Strength: Minimum 75 percent.
   6. Dry Stability: Minimum 200 pounds per square inch.

C. If material source changes, develop new mix design prior to using new materials.

D. Mix materials at central mixing plant. Use shortest mixing time needed to uniformly coat aggregate. Do not use material not mixed properly.

E. Adjust production at mixing plant and delivery to maintain steady paving speed.

PART 3 EXECUTION

3.1 PREPARATION

A. Do not place asphalt concrete pavement until base course has been accepted.

B. Locate and reference utility covers prior to paving operations.

C. Where new pavement joins existing pavement, saw cut edge of existing pavement. Provide cut through full depth of pavement and in straight line. If pavement is cracked, broken or deteriorated, make cut so defective area is removed. Remove existing pavement cut off. Apply tack coat to exposed saw cut edge prior to paving.

D. Remove dirt, sand, leaves, and other objectionable materials from prepared surfaces.

E. Apply tack coat to curb and gutter which will be in contact with pavement.

3.2 PLACING ASPHALT PAVEMENT

A. Place asphalt pavement at temperature between 250 and 325 degrees F with self-propelled laydown machine. Adjust paver speed to match plant production and delivery for continuous paving operation.

B. Pave full-width where possible. If more than one pass is required, leave straight, vertical edge adjacent to next lane to be paved. Compact each pass and apply tack coat to longitudinal edge before placing adjacent pass.

C. Place to compacted thickness indicated on typical sections of Drawings.

D. Compact pavement by rolling to 96 percent of Marshall density. Do not displace or extrude pavement from position.

E. Perform rolling with consecutive passes to achieve even and smooth finish without roller marks. Do not allow rollers to pass over unprotected end of freshly placed pavement. Bevel end of pavement subjected to traffic.

F. Hand rake only when necessary.

3.3 TOLERANCES

A. Smoothness: Maximum variation of 1/4 inch measured longitudinally, transversely, and at construction joints with 10 foot straight edge or string line. Correct depressions or humps exceeding tolerances.

B. Compacted Thickness: Not more than ½ inch greater nor 3/8 inch less than thickness indicated on Drawings. If thickness is deficient, add minimum thickness of 1 inch asphalt concrete pavement.

3.4 QUALITY CONTROL TESTING

A. Gradation and Asphalt Content: Take random samples immediately behind paver before compaction and test in accordance with AASHTO T27 and T11 and ASTM D6307.
   1. Frequency: Take minimum of one sample per lot.
   2. If tests indicate materials are not acceptable, make adjustments in production. If necessary, remove and replace Work.

B. Density: Perform density tests with nuclear gage or core samples.
   1. Frequency: Take minimum of 1 random test for each 1,000 square yards.
   2. Acceptance: Average density is 96 percent or greater. Reject tests less than 92 percent.
   3. If tests indicate Work is not acceptable, re-compact and retest. If necessary, remove and replace Work.

3.5 PROTECTION

A. Do not allow traffic to cross saw cut edge of existing pavement unless temporary ramp is constructed.

B. Protect structures, and other objects from being spattered or marred by tack coat.

C. Protect curb, gutter, and other concrete work from damage by equipment during paving operations.

D. Immediately after placement, protect pavement from mechanical injury until surface temperature is less than 140 degrees F. Prevent traffic from crossing vertical edge of pavement.

END OF SECTION

SECTION 02776

CAST-IN-PLACE CONCRETE SITE ELEMENTS

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Concrete curb and gutter.

1.2 RELATED SECTIONS

A. Section 02315 – Excavation and Embankment.

B. Section 02722 - Untreated Base Course.

C. Section 03100 - Concrete Forms and Accessories.

D. Section 03200 - Concrete Reinforcement.

E. Section 03300 - Cast-in-Place Concrete.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):
   1. AASHTO M213 - Preformed Expansion Joint Fillers for Concrete Paving and Structural Construction (Nonextruding and Resilient Bituminous Types).

1.4 ENVIRONMENTAL REQUIREMENTS

A. Do not place concrete when base surface temperature is less than 40 degrees F, base has free surface water, or base is saturated.

PART 2 PRODUCTS

2.1 MATERIALS

A. Concrete: Class AA(AE) in accordance with Section 03300.

B. Curing Compound: In accordance with Section 03300.

C. Reinforcing Steel: In accordance with Section 03200.

D. Expansion Joint Filler: AASHTO M213, preformed joint filler.

E. Base: Untreated base course in accordance with Section 02722.

PART 3 EXECUTION

3.1 PREPARATION

A. Prepare subgrade in accordance with Section 02315.

B. Place and compact base material.

C. Verify gradients and elevations of base are correct.

D. Cut and prepare areas to be joined to existing concrete.

3.2 FORMING

A. Place and secure forms to correct location, dimension, profile, and gradient.

B. Assemble formwork to permit easy stripping and dismantling without damaging concrete.

C. Place joint filler vertical in position, in straight lines. Secure to formwork during concrete placement.

D. Slip form machine will be accepted for curb and gutter.

E. Place reinforcing steel at locations indicated on Drawings.

3.3 PLACING CONCRETE

A. Notify Engineer minimum 24 hours prior to placing concrete.

B. Moisten base to minimize absorption of water from fresh concrete.

C. Place concrete continuously between predetermined construction joints in accordance with Section 03300.

D. Slope concrete uniformly to drain without bird baths.

E. Spray exposed concrete with curing compound in accordance with Section 03300.

3.4 JOINTS

A. Curb and Gutter:
   1. Control Joints: Score or saw cut at 10 feet on center.
   2. Expansion Joints: Place premolded joint filler at 50 feet on center and at beginning and ending of curb returns at intersections. When concrete is placed with slip form curb and gutter machine, place at beginning and end of each continuous run.

3.5 FINISHING

A. Round edges.

B. Remove marks or irregularities from finish surface.

C. Provide light broom finish.
   1. Curb and Gutter: Finish parallel to flow line.

3.6 BACKFILLING

A. After concrete has cured sufficiently to prevent damage, place backfill behind curb and gutter.

B. Compact backfill material to 96 percent of maximum laboratory density.

3.7 TOLERANCES

A. Maximum Variation of Surface Smoothness: 1/4 inch in 10 feet.

3.8 QUALITY CONTROL TESTING

A. Perform air, slump, and strength tests in accordance with Section 03300.

3.9 PROTECTION

A. Immediately after placement, protect concrete pavement from premature drying, excessive hot or cold temperatures, mechanical injury and defacing.

B. Do not permit vehicular traffic over or operate compaction equipment near concrete for at least 7 days after placement.

END OF SECTION

SECTION 03100

CONCRETE FORMS AND ACCESSORIES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Formwork for cast-in place concrete, with shoring, bracing and anchorage.

B. Openings for other work.

C. Form accessories.

D. Form removal.

1.2 RELATED SECTIONS

A. Section 02776 – Cast-in-Place Concrete Site Elements

B. Section 03200 - Concrete Reinforcement.

C. Section 03300 - Cast-in-Place Concrete.

1.3 REFERENCES

A. American Concrete Institute (ACI):
   1. ACI 318 - Building Code Requirements for Reinforced Concrete.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 318 standards.

PART 2 PRODUCTS

2.1 FORM MATERIALS AND ACCESSORIES

A. Forms and Accessories: Be suitable material, type, size, shape, quality, and strength to ensure construction as designed. Earth forms are not permitted.

B. Form Release Agent: Colorless mineral oil which will not stain concrete, or absorb moisture.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify lines, levels and centers before proceeding with formwork. Ensure that dimensions agree with Drawings.

3.2 ERECTION - FORMWORK

A. Erect formwork, shoring and bracing to achieve design requirements, in accordance with requirements of ACI 301.

B. Provide bracing to ensure stability of formwork. Shore or strengthen formwork subject to overstressing by construction loads.

C. Arrange and assemble formwork to permit dismantling and stripping. Do not damage concrete during stripping. Permit removal of remaining principal shores.

D. Align joints and make watertight. Keep form joints to minimum.

3.3 APPLICATION - FORM RELEASE AGENT

A. Apply form release agent on formwork in accordance with manufacturer's recommendations.

B. Apply prior to placement of reinforcing steel, anchoring devices, and embedded items.

C. Do not apply form release agent where concrete surfaces will receive special finishes or applied coverings which are effected by agent. Soak inside surfaces of untreated forms with clean water. Keep surfaces coated prior to placement of concrete.

3.4 INSERTS, EMBEDDED PARTS, AND OPENINGS

A. Provide formed openings where required for items to be passing through concrete work.

B. Locate and set in place items which will be cast directly into concrete.

C. Coordinate with work of other sections in forming and placing openings, slots, reglets, recesses, sleeves, bolts, anchors, other inserts, and components of other Work.

D. Install accessories in accordance with manufacturer's instructions, straight, level, and plumb. Ensure items are not disturbed during concrete placement.

3.5 FORM CLEANING

A. Clean forms as erection proceeds, to remove foreign matter within forms.

B. Clean formed cavities of debris prior to placing concrete.

C. Flush with water or use compressed air to remove remaining foreign matter. Ensure that water and debris drain to exterior through clean-out ports.

D. During cold weather, remove ice and snow from within forms. Do not use de-icing salts. Do not use water to clean out forms, unless formwork and concrete construction proceed within heated enclosure. Use compressed air or other means to remove foreign matter.

3.6 QUALITY CONTROL

A. Inspect erected formwork, shoring, and bracing to ensure that work is in accordance with formwork design, and that supports, fastenings, wedges, ties, and items are secure.

B. Do not patch formwork.

3.7 FORM REMOVAL

A. Do not remove forms or bracing until concrete has gained sufficient strength to carry its own weight and imposed loads.

B. Loosen forms carefully. Do not wedge pry bars, hammers, or tools against finish concrete surfaces scheduled for exposure to view.

C. Store removed forms in manner that surfaces to be in contact with fresh concrete will not be damaged. Discard damaged forms.

END OF SECTION

SECTION 03200

CONCRETE REINFORCEMENT

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Reinforcing steel bars and accessories for cast-in-place concrete.

1.2 RELATED SECTIONS

A. Section 02501 – Reconstruct Utility Box.

B. Section 03100 - Concrete Forms and Accessories.

C. Section 03300 - Cast-in-Place Concrete.

1.3 REFERENCES

A. American Concrete Institute (ACI):
   1. ACI 318 - Building Code Requirements For Reinforced Concrete.

B. American Society for Testing and Materials (ASTM):
   1. ASTM A82 - Cold Drawn Steel Wire for Concrete Reinforcement.
   2. ASTM A615 - Deformed and Plain Billet Steel Bars for Concrete Reinforcement.

1.4 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 318.

PART 2 PRODUCTS

2.1 REINFORCEMENT

A. Reinforcing Steel: ASTM A615, 60 ksi yield grade; deformed billet steel bars, unfinished.

B. Stirrup Steel: ASTM A82, unfinished.

2.2 ACCESSORIES

A. Tie Wire: Minimum 16 gage annealed type.

B. Chairs, Bolsters, Bar Supports, Spacers: Sized and shaped for strength and support of reinforcement during concrete placement conditions.

2.3 FABRICATION

A. Fabricate concrete reinforcing in accordance with ACI 318.

PART 3 EXECUTION

3.1 PLACEMENT

A. Place, support and secure reinforcement against displacement. Do not deviate from required position.

B. Accommodate placement of formed openings.

C. Conform to ACI 318 code for concrete cover over reinforcement.

END OF SECTION

SECTION 03300

CAST-IN-PLACE CONCRETE

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Cast-in-place concrete.

B. Concrete curing.

C. Concrete finishes.

1.2 RELATED SECTIONS

A. Section 02501 – Reconstruct Utility Box.

B. Section 02776 – Cast-in-Place Concrete Site Elements.

C. Section 03100 - Concrete Forms and Accessories.

D. Section 03200 - Concrete Reinforcement.

1.3 REFERENCES

A. American Association of State Highway and Transportation Officials (AASHTO):
   1. AASHTO M6 - Fine Aggregate for Portland Cement Concrete.
   2. AASHTO M80 - Coarse Aggregate for Portland Cement Concrete.
   3. AASHTO M85 - Portland Cement.
   4. AASHTO M154 - Air-Entraining Admixtures for Concrete.
   5. AASHTO M157 - Ready-Mixed Concrete.
   6. AASHTO M194 - Chemical Admixtures for Concrete.
   7. AASHTO T22 - Compressive Strength of Cylindrical Concrete Specimens.
   8. AASHTO T23 - Making and Curing Concrete Test Specimens in the Field.
   9. AASHTO T119 - Slump of Portland Cement Concrete.
   10. AASHTO T152 - Air Content of Freshly Mixed Concrete by the Pressure Method.

B. American Concrete Institute (ACI):
   1. ACI 305R - Hot Weather Concreting.
   2. ACI 306R - Cold Weather Concreting.
   3. ACI 318 - Building Code Requirements for Reinforced Concrete.

C. American Society for Testing and Materials (ASTM):
   1. ASTM C309 - Liquid Membrane-Forming Compounds for Curing Concrete.

1.4 SUBMITTALS

A. Warranty: Submit to Owner before or with final request for payment.

1.5 QUALITY ASSURANCE

A. Perform Work in accordance with ACI 318.

B. Acquire cement and aggregate from same source for all work.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Store cement protected from moisture.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Hot weather concreting shall comply with ACI 305R, except as modified herein. Concrete temperature, when placed, shall not exceed 90 degrees Fahrenheit (EF). When ambient air temperatures exceed 90EF, moist cure concrete for minimum of 5 days.

B. Cold weather concreting shall comply with ACI 306R, except as modified herein.
   1. When ambient air temperatures are above 45EF, concrete temperature shall be at least that of air temperature, but not greater than 90EF.
   2. When ambient air temperatures are between 30EF and 45EF, concrete temperature shall be at least 60EF.
   3. When ambient air temperatures are below 30EF, concrete temperature shall be at least 70EF.
   4. Concrete shall not be placed when ambient air temperatures are less than 20EF without using blankets and heaters.
   5. Concrete shall not be placed against adjacent concrete, foundations, formwork, reinforcing, or other items that are frozen or have surface temperature less than 40EF.

6. When cold weather will be present during placement and curing periods, maintain concrete surface at not less than 50EF for minimum of 5 days following placement. Forms shall be left in place for said period.

1.7 WARRANTY

A. Provide two year written guarantee to promptly remove and/or repair defective concrete.

PART 2 PRODUCTS

2.1 CONCRETE MATERIALS

A. Cement: AASHTO M85, Type II, low alkali, portland type.

B. Coarse Aggregate:
1. AASHTO M80 as modified herein.
2. Use gradation per Table 03300-1.
3. Do not allow material passing No. 200 sieve to exceed 1.75 percent by weight of combined coarse and fine aggregate.
4. Do not exceed percentages of deleterious substances per Table 03300-2.

Table 03300-1
Gradation - Course Aggregate

Coarse Aggregate	Percentage Passing (by weight)							
Size	2 ½"	2"	1 ½"	1"	3/4"	½"	3/8"	No. 4
2" to No. 4	100	95-100		35-70		10-30		0-5
1" ½" to No. 4		100	95-100		35-70		10-30	0-5
1" to No. 4			100	95-100		25-60		0-10
3/4" to No. 4				100	90-100		20-55	0-10

Table 03300-2 Deleterious Substances - Course Aggregate	
Substance	Percent (by weight)
Soft fragments	2.0
Coal and lignite	0.3
Clay lumps	0.3
Other deleterious substances	2.0

C. Fine Aggregate:
1. AASHTO M6 as modified herein.
2. Use gradation per Table 03300-3.
3. Do not allow material passing No. 200 sieve to exceed 1.75 percent by weight of combined coarse and fine aggregate.
4. Do not exceed percentages of deleterious substances per Table 03300-4.

Table 03300-3 Gradation - Fine Aggregate	
Sieve Size	Percent Passing (by weight)
3/8"	100
No. 4	95-100
No. 16	45-80
No. 50	10-30
No. 100	2-10

Table 03300-4 Deleterious Substances - Fine Aggregate	
Substance	Percent (by weight)
Clay lumps	0.5
Coal and lignite	0.3
Other Deleterious Substances	2.0

D. Water: Potable.

2.2 ADMIXTURES

A. Air Entrainment: AASHTO M154 including Section 5.

B. Water Reducers: AASHTO M194. Obtain approval prior to use.
   1. For low range water reducers, slump requirements on Table 03300-5 may be changed to 1 to 5 inches for all classes of concrete.
   2. For high range water reducers, slump requirements on Table 03300-5 may be changed to 4 to 9 inches for all classes of concrete.

C. Fly Ash: ASTM C618, class F, loss on ignition not to exceed 3 percent, CaO content not to exceed 15 percent. Obtain approval prior to use.

D. Calcium Chloride: Do not use.

E. Fibrous Reinforcing: ASTM C1116, 100 percent virgin polypropylene fibrillated, MD graded, fibers containing no reprocessed olefin materials. Minimum application rate shall equal 1.5 pounds per cubic yard. Manufactured by Fibermesh or-equal.

2.3 ACCESSORIES

A. Curing Compound: ASTM C309, contain pigment or dyes.

2.4 CONCRETE MIX

A. Determine mix design with required proportions of cement, aggregate, admixtures, and water.

B. Provide concrete per Table 03300-5:

Table 03300-5 Concrete Class and Requirements								
CLASS	Coarse Aggregate Size (inches)	Maximum Water/ Cement		Minimum Cement Content (Sacks/ C. Y.)	Slump (inches)	Air Content (Percent)	Mix Design Compressive Strength (PSI)	28 Day Minimum Compressive Strength (PSI)
		Gal/ Sack	Max Ratio (lb/lb)					
AA(AE)	2" to No. 4	5.0	0.44	6.0	1-3.5	5.0-7.5	5210	4000
	1 ½" to No.4	5.0	0.44	6.0	1-3.5	5.0-7.5	5210	4000
	1" to No. 4	5.0	0.44	6.5	1-3.5	5.0-7.5	5210	4000
	3/4" to No. 4	5.0	0.44	6.5	1-3.5	5.0-7.5	5210	4000
A or A(AE)	1 ½" to No. 4	6.0	0.53	5.0	1-3.5	4.5-7.5	3910	3000
	1" to No. 4	6.0	0.53	5.0	1-3.5	4.5-7.5	3910	3000
	3/4" to No. 4	5.5	0.49	5.25	1-3.5	4.5-7.5	3910	3000
B or B(AE)		7.0	0.62	4.0	2-5	3.0-6.0	3260	2500
C or C(AE)		8.0	0.71	4.0	2-5	3.0-6.0	2610	2000

(AE) = Air-Entrainment

C. Maximum size of coarse aggregate:
   1. Not larger than 1/5 of narrowest dimension between sides of forms.
   2. Not larger than 1/3 depth of slabs.
   3. Not larger than 3/4 of minimum clear distance between reinforcing bars or between bars and forms, whichever is least.

D. Mix and deliver concrete in accordance with AASHTO M157.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify requirements for concrete cover over reinforcement.

B. Verify that anchors, seats, plates, reinforcement and other items to be cast into concrete are accurately placed, positioned securely, and will not cause hardship in placing concrete.

3.2 PREPARATION

A. Prepare previously placed concrete by cleaning with steel brush and applying bonding agent in accordance with manufacturer's instructions.

B. Coordinate the placement of joint devices with erection of concrete formwork and placement of form accessories.

C. Keep concrete subgrade firm and free from water.

D. If concrete subgrade is dry, dampen with water prior to placing concrete.

E. Keep materials concrete is to come in contact with free from frost.

3.3 PLACING CONCRETE

A. Place concrete in accordance with ACI 318.

B. Notify Engineer minimum 24 hours prior to placing concrete.

C. Ensure reinforcement, inserts and embedded parts are not disturbed during concrete placement.

D. Convey concrete from mixer to place of final deposit by methods that will prevent separation or loss of materials. Use tremies or other approved method. Do not allow concrete to free fall more than 5 feet, or less if separation of materials occur.

E. Place concrete continuously between predetermined expansion, control, and construction joints.

F. Do not interrupt successive placement; do not permit cold joints to occur.

G. After concrete has been conveyed from mixer, do not added water. Adding water to placed concrete will be cause for rejection.

3.4 CONCRETE FINISHING

A. Consolidate concrete surface by final hand-troweling operation, free of trowel marks, uniform in texture and appearance.

B. Provide non-slip broom finish to exterior concrete platforms and slabs. Slightly roughen concrete surface by grooming with fiber-bristle broom.

3.5 CURING AND PROTECTION

A. Immediately after placement, protect concrete from premature drying, excessively hot or cold temperatures, and mechanical injury.

B. Maintain concrete with minimal moisture loss at relatively constant temperature for period necessary for hydration of cement and hardening of concrete.

C. Spray exposed concrete surfaces with concrete curing compound after free water has disappeared. Apply at rate recommended by manufacturer.

3.6 QUALITY CONTROL TESTING

A. Take minimum of one test for each 50 or less cubic yards, at least once each day, or at least once per concrete placement:
   1. Slump test: ASTM C143.
   2. Air test: ASTM C231.
   3. Strength test: ASTM C31 and C39, cast four cylinders for each test. Test one cylinder after 7 days and three cylinders after 28 days. Strength will be average for 3 cylinders.

B. Tests shall meet requirements of Table 03300-5.

C. Air and Slump Tests:
   1. Perform initial air and slump tests on first truck of each day prior to placing concrete in forms.
      a) If initial air and slump tests are acceptable, proceed with placement of concrete.
      b) If initial air and slump tests are not acceptable, reject concrete and remove from site or make required corrections to make concrete acceptable.
   2. Perform final air and slump tests on middle portion of batch in accordance with ASTM C172.
   3. Perform additional tests as needed to control quality of concrete.

D. If strength test does not meet specification, Owner may reject concrete and require removal or allow concrete to remain with price reduction.

3.8 PATCHING

A. Allow Owner to inspect concrete surfaces immediately upon removal of forms.

B. Excessive honeycomb or embedded debris in concrete is not acceptable. Notify Owner upon discovery.

C. Patch imperfections.

3.9 DEFECTIVE CONCRETE

A. Defective Concrete: Concrete not conforming to required lines, details, dimensions, tolerances or specified requirements.

B. Repair or replace defective concrete.

3.10 SCHEDULE - CONCRETE TYPES

A. Curb and Gutter: Class AA(AE) with fibrous reinforcing.

B. Concrete Collars: Class AA(AE) with fibrous reinforcing.

C. Light Pole Bases: Class AA(AE).

END OF SECTION

SECTION 16000

ELECTRICAL

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Conduit, wiring devices, and conductors.

B. Safety switch.

C. Light fixtures, arms and poles.

1.2 RELATED SECTIONS

A. Section 01315 – Project Coordination & Meetings.

B. Section 02321 – Trenching.

1.3 REFERENCES

A. American Society for Testing and Materials (ASTM).
   1. ASTM B33 - Tinned Soft Annealed Copper Wire for Electrical Purposes.

B. National Electrical Code (NEC).

C. National Electrical Manufacturer's Association (NEMA).

D. Underwriters Laboratories, Inc. (UL).

1.4 SUBMITTALS

A. Product Data: Submit for safety switch, light fixtures, arms and poles .

1.5 REGULATORY REQUIREMENTS

A. Requirements of Regulatory Agencies:
   1. National Electric Code, National Electric Safety Code and local ordinances and regulations shall govern unless more stringent requirements are specified.

   2. Material and equipment provided shall meet standards of NEMA or UL, and bear their label wherever standards have been established and label service is available.

PART 2 PRODUCTS

2.1 MATERIALS

A. Conduit: Size as indicated, but not less than 1 inch.
   1. Schedule 40 Polyvinyl Chloride (PVC) Conduit: Allowed for use only underground or below concrete with galvanized rigid steel or IMC sweep elbows and risers.
   2. Schedule 40 PVC is allowed where protected by concrete or underground only.
   3. Galvanized rigid steel is required above ground.

B. Conduit Fittings:
   1. Rigid Steel Conduit : Threaded and designed for conduit use.
   2. PVC Conduit:
      a) PVC type. Use PVC adapters at all boxes.
      b) PVC components, (conduit, fittings, cement and adaptors) shall be from same Manufacturer.

C. Conductors:
   1. Copper: ASTM B33, minimum size shall be No. 12.
   2. Stranding:
      a) No. 10 and Smaller: Solid.
      b) No. 8 and Larger: Class B.
   3. Insulation: 600V type RHH-USE-RHW crosslink polyethylene compound.
   4. Duplex or triplex assemblies of wire suitable for underground installation are also acceptable.

D. Wiring Devices: Heavy duty, galvanized flat rolled sheet steel wiring devices with knockouts and accessories. Provide corrosion-resistant cast-metal weatherproof boxes with locking devices where indicated on Drawings.

E. Grounding:
1. Cable: Bare copper.
2. Lugs: Clamp type, high conductivity copper alloy.
3. Rods: ¾ inch by 8 feet long copper weld.

2.2 DISCONNECT/SAFETY SWITCH

A. Type: Dead front fused safety switch, outdoor, NEMA Type 3-R, 30 Amp main bus, 480 volt, Square D fused disconnect, H 361RB(use two poles only) or equivalent.

B. Fuses: Acceptable fuses shall be DSL 30 Amp.

C. Safety Switch to be mounted on framing strut.

2.3 LIGHT FIXTURES AND POLES

A. Light Fixture:

1. Fixture: The fixture shall be a Gardco Square Form 10, EH192-3-250 MH-QUAD with 480 volt tap-BRA – LF-PC. The ballast shall be rated for all voltages, however, the supply voltage will be 480 volts.

2. Photometrics: The photometrics of the fixture are to be Type III.

3. Pole and Arm Requirements: The pole shall be a Thomas Lighting, SSS20-4-7-D2-BRP to be mounted on a concrete base as shown on drawings. Arms are supplied with the luminaire and according to luminaire description shown on drawings.

4. Furnish light fixtures complete with photocells to control each light individually. Lights shall be on from dusk to dawn.

PART 3 EXECUTION

3.1 INSTALLATION

A. Install galvanized pipe and framing strut as shown on drawings for mounting of safety switch. Install wiring devices and other electrical accessories where indicated on drawings.

B. Verify all dimensions and location of existing junction box.

C. Verify voltage.

D. Contractor to furnish conduit, conductors and equipment from existing junction box to and including the lights, poles and bases.

E. Pole Installation:
   1. Build pole base from concrete as shown on Drawings. Properly place bolts according to manufacturers directions to attach pole and necessary conduit in pole base.

   2. After concrete is cured, attach pole according to manufacturers directions and plum it vertically.

F. Trenching: Trenching shall be a minimum of 24 inches deep. The backfill material within 4 inches of electrical conduit shall pass through a ¾ inch sieve frame and contain less than 30 % rock solids by volume. Backfill in the remainder of the trench shall be free of rocks larger than 4 inches in diameter.

G. Conduit:
   1. Install conduit to allow for expansion from settlement of the ground or freezing and heaving of the earth. Also use proper fittings and adaptors to allow the conduit to be watertight.
   2. Provide 24 inches minimum depth for buried conduit.
   3. Use pulling grips when pulling conductor through conduit.
   4. Install only rigid steel conduit above ground.

H. Splice conductors only in junction boxes or similar accessible locations. Keep splices to minimum.

I. Connect conductors with soderless compression or mechanical type screw, which does not bear directly on wire.

J. Use twist-on type connectors for light fixtures only. Use "Scotchlok" or approved equal.

K. Provide grounding system in accordance with NEC. Provide lugs for all
1. Provide lungs for safety switch to be grounded.
2. Use 8’ driven ground rods.
3. Install ground rod at each pole location and properly ground pole.

3.2 DEMONSTRATION

A. Test system and demonstrate equipment as working and operating property. Notify Engineer prior to test.

END OF SECTION